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ORAL SURGERY & DENTAL IMPLANT CENTER

WestsideOMS Oral Surgery & Dental Implant Center

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Winter 2015 ~ A Quarterly Update

Dear Colleague:

Each year we continue to see growth and development in our practice accompanied by an increase in treatment success. Through this quarterly newsletter, we wish to share with you some of the latest developments in oral surgery and implant dentistry, as well as open communication with your office.

If we can provide any additional information, or if you would like to see an article on a particular topic in our next issue, please do not hesitate to call. We appreciate the trust you place in us by allowing us to participate in the care of your patients.

Regards,

Dr. Rupi Dhadli

Buccal Bone Resorption Around Posterior Implants after Surgery

Takuma T, Oishi K, et al.
Int J Oral Maxillofac Implants. 2014 May-Jun;29(3):634-41

This prospective study aimed to examine postoperative dimensional changes in the buccal bone and mucosa around single-stage implants placed in the posterior region. The dimensions of peri-implant tissue around screw-type implants placed in the posterior region were examined at surgery (baseline) and 6 months and 1 year after surgery. The lateral contour of the buccal bone and mucosa was horizontally measured at five vertical heights at 1-mm intervals (+1 to -3 mm from the implant platform) using custom-designed instruments. Bone resorption on the proximal sides was assessed on radiographs. Mucosal recession was measured on plaster casts of the dentition. Sixty-six implants placed in 30 patients were examined.

All implants were clinically osseointegrated and stable throughout the study period. The buccal bone exhibited horizontal resorption throughout the study period, even at the most apical height measured. Assessed at each height, thicker bone (> 2 mm thick) tended to exhibit horizontal resorption during the first 6 months after surgery. However, the bone resorbed horizontally by approximately 0.4 mm during the final 6 months, irrespective of its contour. Vertical resorption of the buccal marginal bone was approximately 1 mm during the period from 6 months to 1 year. The bone-retaining group at the 1-year time point was found to have thicker bone walls at baseline compared with the bone-loss group. The thickness of the buccal mucosa showed little change. *There was no obvious correlation between buccal bone resorption and mucosal recession. The buccal bone exhibited both horizontal and vertical resorption over the year after surgery. The initial contour of the bone was significantly associated with bone retention or loss at 1 year. However, mucosal recession was not directly affected by buccal bone resorption.*

Economic Evaluation of Single-Tooth Replacement: Dental Implant Versus Fixed Partial Denture

Kim Y, Park JY, et al.
Int J Oral Maxillofac Implants. 2014 May-Jun;29(3):600-7

This study assessed the cost-effectiveness from a societal perspective of a dental implant compared with a three-unit tooth-supportedfixed partial denture (FPD) for the replacement of a single tooth in 2010. A decision tree was developed to estimate cost-effectiveness over a 10-year period. The survival rates of single-tooth implants and FPDs were extracted from a previous studies. Medical costs included initial treatment costs, maintenance costs, and costs to treat complications. Patient surveys were used to obtain the costs of the initial single-tooth implant or FPD. Maintenance costs

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Dr. Dhadli is dual degreed Oral and Maxillofacial Surgeons both a physician and dental surgeon. Dr. Dhadli attended Dental School and Medical School at Case Western Reserve University. She furthered her training and education through a 5 year intensive residency program in Oral and Maxillofacial Surgery and Anesthesia at University Hospitals of Cleveland, OH, Mt. Sinai Medical Center, Rainbow Babies and Children Hospital, and Metrohealth Medical Center in Cleveland, OH.

Rupi Dhadli, DDS, MD

Economic Evaluation...*continued*

and costs to treat complications were based on surveys of seven clinical experts at dental clinics or hospitals. Transportation costs were calculated based on the number of visits for implant or FPD treatment. Patient time costs were estimated using the number of visits and time required, hourly wage, and employment rate. Future costs were discounted by 5% to convert to present values.

The results of a 10-year period model showed that a single dental implant cost US $261 (clinic) to $342 (hospital) more than an FPD and had an average survival rate that was 10.4% higher. The incremental cost-effectiveness ratio was $2,514 in a clinic and $3,290 in a hospital for a prosthesis in situ for 10 years. The sensitivity analysis showed that initial treatment costs and survival rate influenced the cost-effectiveness. If the cost of an implant were reduced to 80% of the current cost, the implant would become the dominant intervention. *Although the level of evidence for effectiveness is low, and some aspects of single-tooth implants or FPDs, such as satisfaction, were not considered, this study will help patients requiring single-tooth replacement to choose the best treatment option.*

Outcomes of Implants and Restorations Placed in General Dental Practices

Da Silva JD, Kazimiroff J, et al.
J Am Dent Assoc. 2014 Jul;145(7):704-13

The authors conducted a study to determine the types, outcomes, risk factors and esthetic assessment of implants and their restorations placed in the general practices of a practice-based research network. All patients who visited network practices three to five years previously and underwent placement of an implant and restoration within the practice were invited to enroll. Practitioner-investigators (P-Is) recorded the status of the implant and restoration, characteristics of the implant site and restoration, presence of peri-implant pathology and an esthetic assessment by the P-I and patient. The P-Is classified implants as failures if the original implant was missing or had been replaced, the implant was mobile or elicited pain on percussion, there was overt clinical or radiographic evidence of pathology or excessive bone loss (> 0.2 millimeter per year after an initial bone loss of 2 mm). They classified restorations as failures if they had been replaced or if there was abutment or restoration fracture.

The authors enrolled 922 implants and patients from 87 practices, with a mean (standard deviation) follow-up of 4.2 years. Of the 920 implants for which complete data records were available, 64 (7.0 percent) were classified as failures when excessive bone loss was excluded from the analysis. When excessive bone loss was included, 172 implants (18.7 percent) were classified as failures. According to the results, a history of severe periodontitis, sites with preexisting inflammation or type IV bone, cases of immediate implant placement and placement in the incisor or canine region were associated with implant failure. According to the results, sites with preexisting inflammation were associated with a greater risk of implant failure. Of the 908 surviving implants, 20 (2.2 percent) had restorations replaced or judged as needing to be replaced. The majority of P-Is and patients were satisfied with the esthetic outcomes for both the implant and restoration. *These results suggest that implant survival and success rates in general dental practices may be lower than those reported in studies conducted in academic or specialty settings. The results of this study, generated in the private general practice setting, add to the evidence base to facilitate implant treatment planning.*

Radiographic Appearance of Commonly Used Cements in Implant Dentistry

Pette GA, Ganeles J, et al.
Int J Periodontics Restorative Dent. 2014 Jan-Feb;33(1):61-8

Cement-retained restorations allow for a conventional fixed partial denture approach to restoring dental implants. However, inadequate removal of excess cement at the time of cementation may introduce a severe complication: cement-induced peri-implantitis. Radiopaque cements are more easily detected on radiographs and should improve the recognition of extravasated cement at the time of insertion. The purpose of this study was to evaluate the radiopacity of commercially available cements in vitro. Eighteen different cements commonly used for luting restorations to implants were tested at both 0.5- and 1.0-mm thicknesses. The cements examined were zinc oxide eugenol, zinc oxide, zinc polycarboxylate, zinc phosphate, resin-reinforced glass ionomer, urethane resin, resin, and composite resin.

Two samples of each cement thickness underwent standardized radiography next to an aluminum step wedge as a reference. The mean grayscale value of each of the nine 1-mm steps in the step wedge were used as reference values and compared to each of the cement samples. Temp Bond Clear (resin), IMProv (urethane resin), PremierImplant Cement (resin), and Temrex NE (resin) were not radiographically detectable at either sample thickness. Cements containing zinc were the most detectable upon radiographic analysis. There are significant differences in the radiopacity of many commonly used cements. *Since cement induced peri-implantitis can lead to late implant failure, cements that can be visualized radiographically may reduce the incidence of this problem.*

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